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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,171	06/21/2001	Yang-lim Choi	Q64026	4000
7590	01/05/2004		EXAMINER	
SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC 2100 Pennsylvania Avenue, N.W. Washington, DC 20037-3213			SAJOUS, WESNER	
			ART UNIT	PAPER NUMBER
			2676	
			DATE MAILED: 01/05/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/885,171	CHOI ET AL.
	Examiner	Art Unit
	Wesner Sajous	2676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
 THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 9/25/03 & 10/3/03.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 2-20 is/are pending in the application.
 - 4a) Of the above claim(s) 15-19 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 2-7,10,13,14 and 20 is/are rejected.
- 7) Claim(s) 8,9,11 and 12 is/are objected to.
- 8) Claim(s) 15-19 are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6-7, 10</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remark

This communication is responsive to the amendment and response filed on 9/25, and on 10/3/2003. Claim 1 is canceled, and claim 20 is added. Accordingly, claims 2-20 are currently presented for examination.

Response to Arguments

The Applicant's arguments with respect to the claim rejections have been fully considered but are moot in view of the new ground of rejections.

Allowable Subject Matter

1. The indicated allowability of claims 3-7, 13-14, and 15-19 is withdrawn in view of the newly discovered reference(s) to Nishida. Rejections based on the newly cited reference(s) follow.

Election/Restriction

1. Claims 2-20 are directed to inventions that are independent or distinct from the invention originally claimed for the following reasons:

This application contains claims directed to the following patentably distinct species of the claimed invention:

Species I. Claims 2-14, and 20, drawn to shape descriptor and straight lines determination and is classified in class 345, subclasses 441 and 443, and is associated to the species of figs. 1-3.

Species II. Claims 15-19, drawn to image searching and comparing for similarity and is classified in class 707, subclasses 3 and 6, and is associated to the species of figs. 4-6.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, 2-14, and 20 generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the

case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

2. During a telephone conversation with Stuart Lee-calling on behalf of Mr. Peter A. Mc. Kenna, registration #38,551, on 12/18/2003 a provisional election was made without traverse to prosecute the invention of species 1, claims 2-14 and 20. Applicant in replying to this Office action must make affirmation of this election. Claims 15-19 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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6. Claim 6 recites the limitation "the background" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 2-7, 10, 13-14 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishida (US Pat. 5497432)

Considering claim 2, Nishida discloses a shape descriptor extracting method (fig. 1) comprising: extracting (via S121) a skeleton (see fig. 4) from an input image (S100, see also fig. 3); obtaining (via item 30 of fig. 2) a first list of straight lines (i.e., lines 0-18, see fig. 6) by [inherently] connecting pixels based on the extracted skeleton (of, i.e., fig. 4); and determining (via item 30 of fig. 2) a second list of straight lines [inherent in fig. 15] by normalizing (e.g., via the algorithms depicted at figs. 7-14), the first list of straight lines (fig. 6) as a shape descriptor. See col. 4, items 1-30, col. 5, lines 40-43, and col. 6, line 2 through col. 12, line 18, wherein the normalization step is performed by the minimum and maximum line segment coordinates calculation using the parameters depicted at figs. 7, 11 and 13.

Re claim 3, Nishida discloses obtaining a distance map by performing a distance transform on the input image; and extracting a skeleton from the distance map. See

col. 5, lines 40-60, wherein the distance map is characterized by the calculated height and weight of the character string.

As per claim 4, Nishida discloses thinning the extracted skeleton; and extracting straight lines by connecting respective pixels within the thinned skeleton (as performed by steps 121-125 of fig. 1, see also figs. 5-6).

Re claim 5, Nishida discloses making a list of starting point and ending points of the connected lines (see fig. 7, wherein Nos. 0-18 correspond to the lines, and the min and max coordinates associated with the lengths correspond with the distance between end points of the lines). In addition, Nishida discloses a first list of straight lines (i.e., lines 0-18, see fig. 6) by a straight lines combination of the extracted lines (see figs. 5-6); and determining a second list of straight lines [inherent in fig. 15], obtained by normalizing (e.g., via the algorithms depicted at figs. 7-14), the first list of straight lines (fig. 6) based on the maximum distance between ending points of respective lines as a shape descriptor. See col. 7, lines 10-45 and col. 8, line 53 to col. 10, line 10.

Re claim 6, Nishida [inherently] discloses (via fig. 7) the equivalence for a distance transform based on a function indicating respective points within an object with the minimum distance value of the corresponding point from [a] background. See col. 6, line 2 through col. 12, line 18.

As per claim 7, Nishida the equivalence for discloses obtaining a local maximum (Xmax) from the distance map (i.e., LENGTH associated with the max and min coordinates, see fig. 7) using an edge detecting method (as characterized by the disclosure at col. 9, lines 18-35.

Regarding claim 10, Nishida discloses the input image is a binary image. See cols. 4-5, line 65-3.

As per claim 13, Nishida discloses the equivalence for performing a straight-line combination (see figs 8-10) by [inherently] changing threshold values of an angle between the straight lines, a distance and a length of a straight line (as depicted in figs. 8-10) from the obtained first list of straight lines (as depicted in fig. 6). Note that each of the lines depicted in figs. 8-10 for the combination of characters includes a length and distance associated with the lines of fig. 6, and to combine the pieces of lines together, a threshold value associated with the lines must be calculated, so as to make a valid connection between the lines to result to a complete character.

As per claim 14, the claimed “repeating the straight line combination until the number of remaining straight lines becomes equal to or less than a predetermined number” is inherently performed in Nishida, because in Nishida all the pieces of lines (i.e., lines 8-8 to 8-12) associated with a character (i.e., character 5) must be accounted for in the min and max coordinates calculation before the desired outcome is achieved.

As per claim 20, Nishida discloses obtaining a map of the input image (see fig. 3); and extracting a skeleton (see fig. 4) from the obtained map.

Allowable Subject Matter

10. Claims 8-9, 11-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, because the prior art of record

fail to teach or suggest a shape descriptor extracting method comprises the step of performing a convolution using a local maximum detecting mask of four directions to obtain a local maximum (in re claim 8); recording a label corresponding to a direction having the greatest size on a direction map and a magnitude map (as recited in claim 9); and leaving a pixel having the greatest size in a direction rotated by 90 degree from the corresponding direction on the direction map, and removing the rest of the pixels (as recited in claim 11).

Conclusion

Any response to this action should be mailed to:

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Washington, DC 20231

Or faxed to:

(703) 308-9051, (for formal communications; please mark "EXPEDITED PROCEDURE")

Or:

(703) 872-9314 (**for technology center 2600 only**)

Hand-held delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, 6th floor (receptionist).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesner Sajous whose telephone number is (703) 308-5857. The examiner can be reached on Mondays thru Thursdays and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached at (703) 308-6829. The fax phone number for this group is (703) 308-6606.

Wesner Sajous - WSS
12/18/2003